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Terriera transversa sp. nov. from Hainan, China

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Abstract — A new species, *Terriera transversa*, is described, illustrated, and compared with similar taxa. This fungus was collected from dead leaves of *Pandanus* sp. in Jianfengling National Forest Park of Hainan Province, China. It is distinguished by deeply embedded ascomata perpendicular to the host veins and asci with truncate apices. The type specimen is deposited in the Reference Collection of Forest Fungi of Anhui Agricultural University, China (AAUF).

Key words — morphological character, *Pandanaceae, Rhytismataceae, Rhytismatales*, taxonomy

Introduction

During a visit to Hainan, South China, in June 2014, a week was devoted to collecting fungal specimens. Jianfengling National Forest Park, the largest, richest, and best-preserved tropical rainforest in China, was chosen as the destination due to its unique natural environment. Amongst the collections obtained, a new *Terriera* species was found from dead leaves of *Pandanus* sp. in Tianchi alpine lake at an altitude of 880 m.

The genus *Terriera* was proposed by Eriksson (1970) with *T. cladophila* (Lév.) B. Erikss. as its only species; subsequently an additional 25 species and one variety have been included in the genus (IndexFungorum 2015). For China, ten *Terriera* species have been recorded (none of them from tropical rainforests): *T. angularis, T. brevis, T. camelliae, T. coacervata, T. huangshanensis, T. illiciicola, T. mangiferae, T. petrakii, T. rotundata*, and *T. simplex* (Sivanesan & Hsieh 1989,

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[A] Qing Li and Shi-Juan Wang contributed equally to this work.

Fröhlich & Hyde 2000, Yang et al. 2011, Chen et al. 2012, Zheng et al. 2012, Song et al. 2012, Gao et al. 2012, Zhou et al. 2013, Li et al. 2014).

Our new species from Hainan, described here as *Terriera transversa*, is the first report of *Terriera* from tropical rainforests of China.

Materials & methods

The study was based on a collection made in 2014 from Hainan, China. Specimens were rehydrated in water for 15 min. and ascomata were sectioned vertically at a thickness of 10–15 µm using a YD-1508-III freezing microtome (Jinhua, China). The outlines of fruitbodies were observed in 0.1% (w/v) cotton blue in lactophenol-glycerin. The color of internal fruitbody structures was observed in water. Asci, ascospores and paraphyses were measured from squash mounts in 5% KOH solution. Line and point integrated drawings of internal structures of ascomata were prepared using a Panasonic XSJ-2 microscope drawing device (Osaka, Japan). Photographs were taken using a Sony DSC-TX7C digital camera (Tokyo, Japan), and a digital camera connected to an Olympus CX31RTSF microscope (Tokyo, Japan). The type specimen is deposited in the Reference Collection of Forest Fungi of Anhui Agricultural University, Hefei, China (AAUF).

Taxonomy

Terriera transversa Y.R. Lin & Qing Li, **sp. nov.** FIGS 1, 2

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Differs from *Terriera cladophila* by its deeply embedded ascomata perpendicular to the host veins and not associated with conidiomata, smaller asci with truncate or subtruncate apices, and ascospores tapering to both ends.

TYPE: China, Hainan, Jianfengling National Park, Tianchi, alt. 880 m, on dead leaves of *Pandanus* sp. (*Pandanaceae*), 21 June 2014, Y.R. Lin, S.J. Wang, & Q. Li 2794 (**Holotype**, AAUF 68902).

ETYMOLOGY: *transversa* (Latin = transverse), referring to the arrangement of the ascomata, which are mostly perpendicular to the host veins.

COLONIES on both sides of leaves, forming subcircular or irregular dull brown to grey-yellow bleached spots 2–5–(7) mm diam. that sometimes coalesce into larger irregular shapes.

ZONE LINES infrequent or sometimes absent, pale brown, wide, diffused, entirely or partly surrounding the paler areas without an obvious edge.

CONIDIOMATA not observed.

ASCOMATA developing on both sides of dead leaves, predominantly hypophyllous, mostly perpendicular to the host veins, sometimes confluent in groups of two or three. In surface view, ascomata 470–1150 × 250–330 µm, elliptical or oblong-elliptical in outline, ends slightly acute to obtuse. Whole surface of ascomata black, matt or slightly glossy, with a clearly marked outline, moderately raising the substratum surface, opening by a single longitudinal

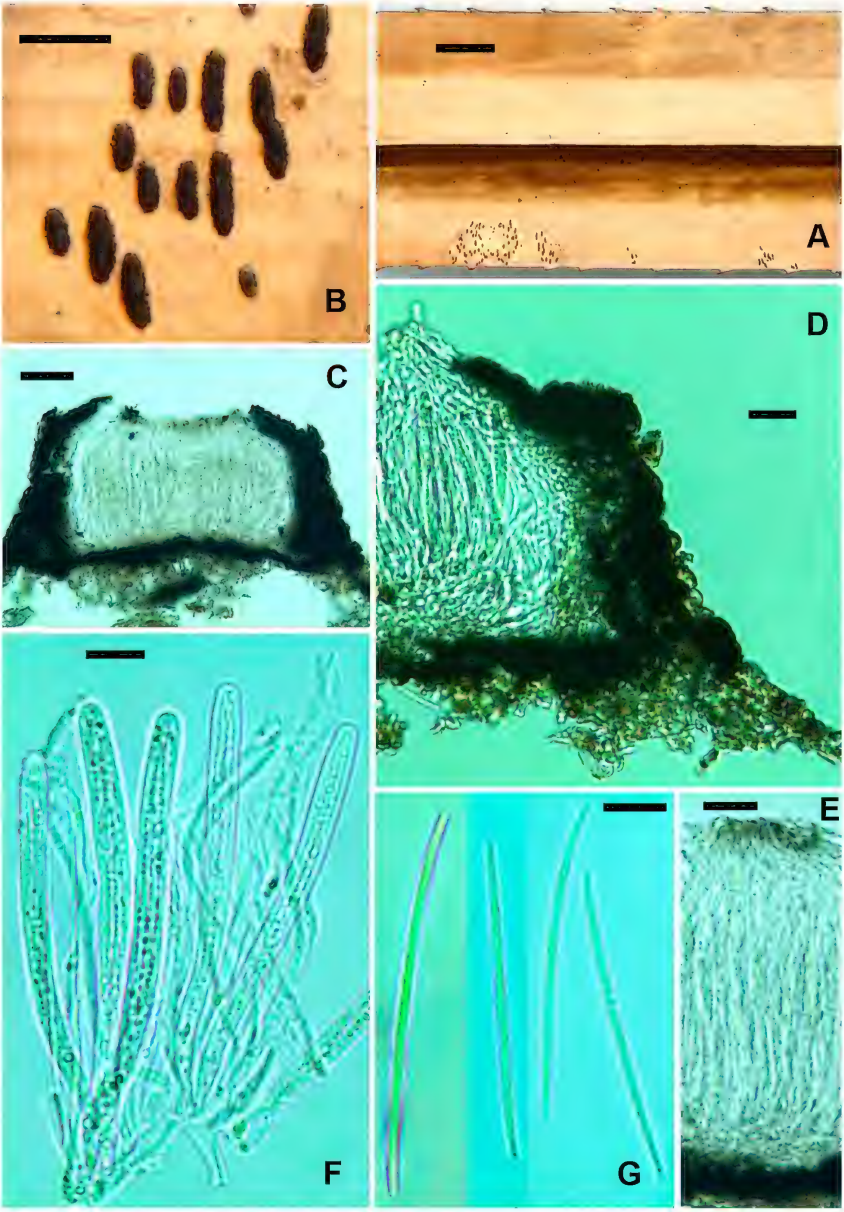

Fig. 1. *Terriera transversa* (holotype AAUF 68902) on *Pandanus* sp.: A. Ascomata on a leaf. B. Detail of ascomata. C. Ascoma in median vertical section. D. Portion of ascoma in median vertical section. E. Hymenium and basal stroma. F. Asci and paraphyses. G. Ascospores. Bars: A = 10 mm; B = 1 mm; C = 50 µm; D = 20 µm; E–G = 10 µm.

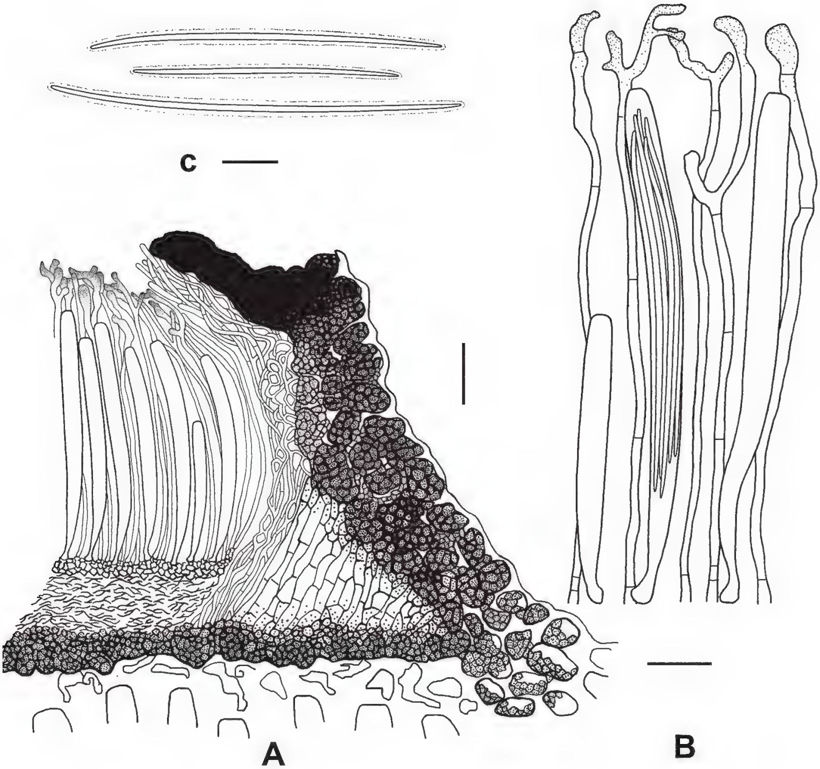

Fig. 2. *Terriera transversa* (holotype AAUF 68902): A. Portion of ascoma in median vertical section B. Asci and paraphyses. C. Ascospores. Bars: A = 20 µm; B, C = 10 µm.

split nearly extend to the edge of the ascomata. Lips absent. In median vertical section, ascomata deeply embedded, with host cells becoming filled with fungal tissue as the ascoma continues development. Covering stroma 30–45 µm thick, composed of textura angularis and globulosa with blackish brown to black thick-walled cells 2–5.5 µm diam., but with a group of nearly colourless, thin-walled, pale cells in the inside part of the upper half; a short, 12–20 µm thick extension comprising strongly carbonized tissue with no obvious cellular structure and adjacent to the top of the covering stroma. Excipulum well developed, 10–18 µm thick, arising from the inner layer of the basal stroma, septate, consisting of colorless textura porrecta-intricata with hyphae 1.2–1.8 µm diam., sometimes forming a loose reticular structure in some local parts. BASAL STROMA 8–18 µm thick, dark brown or black-brown composed of angular to globose, thick-walled cells 2.5–4 µm diam. A 35–60 µm thick textura prismatica with somewhat thin-walled, nearly colorless to grey-brown cells existing between the covering stroma and basal stroma. SUBHYMENIUM 12–22 µm thick, consisting of hyaline textura angularis and intricata. PARAPHYSES 85–105 × 1.5–2 µm, filiform, hyaline, sparsely septate, often branching 1–2 times and gradually irregularly swollen to 2.8–4 µm near the apex, with an inconspicuous thin gelatinous matrix forming a light grey-brown 15–20 µm thick epithecium above the asci. Asci ripening sequentially, 70–86 × 5–6 µm, cylindrical, somewhat short-stalked, thin-walled, apex truncate or subtruncate, without circumapical thickening, J–, 8-spored. Ascospores arranged in a fascicle, 45–68 × 1.0–1.2 µm, filiform, gradually tapered towards the both ends, hyaline, aseptate, smooth-walled, with a gelatinous sheath ca 0.5 µm thick.

HOST SPECIES, HABITAT, & DISTRIBUTION: Producing ascomata on dead leaves of a *Pandanus* sp. Known only from the type locality, Hainan Province, China.

COMMENTS — The new species resembles the type species of *Terriera*, *T. cladophila* (Eriksson 1970), which produces brown diffuse zone lines, small bleached spots, and a well-developed subhymenium of textura angularis and intricata. However, *T. cladophila* irregularly scatters on dead or living twigs and has circular to elliptical ascomata associated with conidiomata, hyphal bridges at the base of adjacent paraphyses, larger asci (80–125 × 6–9 µm) with rather rounded apices, and non-tapered ascospores without a mucous sheath (Minter 1996).

Terriera simplex Y.L. Lin et al., which is very similar to *T. transversa* in the truncate or subtruncate apices of its asci, differs in the presence of conidiomata, subepidermal ascomata not associated with zone lines, a poorly developed excipulum (7–12 µm), synchronously maturing asci, and thinner paraphyses (1.2–1.5 µm wide) that are apically unbranched and do not form an epithecium (Gao et al. 2012).

Terriera minor (Tehon) P.R. Johnst. is easily distinguished from the new species by its smaller ascomata (400–800 × 200–300 µm) with rounded or obtuse ends, aseptate paraphyses branching 2–3 times in the upper 30–40 µm, and larger ascospores (70–100 × 1.5–2 µm) with 0–1 septa (Johnston 1988, 1989).

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